

# LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF 84MM LAUNCHER AND CARTRIDGE, M136, AT4 AND M287 TRACER TRAINER, AT4 PACKED IN PLYWOOD AND WOODEN BOXES (PALLETIZED)

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THIS DOCUMENT INCLUDES OUTLOADING PROCEDURES FOR CONVENTIONAL TYPE TRAILERS AND FOR TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES AS APPROVED BY THE BUREAU OF EXPLOSIVES, ASSOCIATION OF AMERICAN RAILROADS. CAUTION: THE PROCEDURES SHOWN HEREIN FOR BOTH TYPES OF TRAILERS, ARE ONLY APPLICABLE FOR HIGHWAY MOVEMENTS; NOT FOR CONTAINER/TRAILER-ON-FLAT-CAR MOVEMENTS.

**DO NOT SCALE**

REVISIONS		DRFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
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## GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 3).
- THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE AT4 84MM LAUNCHER AND CARTRIDGE, M136 AND TO THE M287 AT4 TRACER TRAINER, PACKED FIVE PER BOX, UNITIZED FOUR BOXES PER PALLET UNIT. REFER TO U.S. ARMY AMC DRAWING 19-48-4116/37-20PA1002 FOR UNITIZATION PROCEDURES FOR PALLET UNIT "A" AND TO U.S. ARMY AMC DRAWING 19-48-4116/37B-20PA1002 FOR PALLET UNIT "B".
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL VAN TRAILERS, AND FOR SHIPMENTS IN VAN TRAILERS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES (CROSS MEMBERS AND WALL MEMBERS) AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. TRAILERS WHICH ARE 40'-0" LONG BY 7'-6" TO 7'-10" WIDE (INSIDE DIMENSIONS) HAVE BEEN SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE EIGHTY-NINE (89") THRU NINETY-NINE INCHES (99") IN WIDTH AND FOR TRAILERS OF OTHER LENGTHS FROM THE SHORTEST TO THE LONGEST AVAILABLE (REF: 24' TO 53'), AND FOR STRAIGHT TRUCK VANS. THE LOADS SHOWN HEREIN ARE LIMITED TO HIGHWAY MOVEMENT ONLY.
- D. THE OUTLOADING PROCEDURES SPECIFIED IN THE PARTIAL ELEVATION VIEWS SHOWN ON PAGES 5 AND 7 ARE FOR TRAILERS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. CROSS MEMBER ATTACHMENT FACILITIES WITHIN THESE TRAILERS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED HEREIN. CAUTION: TRAILERS EQUIPPED WITH FACILITIES WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED. THE HEIGHT DIMENSIONS SPECIFIED WITHIN THIS DRAWING FOR THE INSTALLATION OF CROSS MEMBERS ARE IDENTICAL WITH THOSE RECOMMENDED BY THE BUREAU OF EXPLOSIVES PAMPHLET 6C, AND APPENDICES THERETO. ONE CROSS MEMBER WILL BE REQUIRED FOR EACH 10,000 POUNDS OF LADING AND SHOULD NOT BE RELIED UPON TO RETAIN A GREATER WEIGHT. CROSS MEMBERS WILL NOT BE DOUBLED, THAT IS, TWO CROSS MEMBERS AT THE SAME HEIGHT LOCATION WILL NOT BE PLACED SIDE BY SIDE.
- E. VOIDS LENGTHWISE WITHIN THE LOAD MUST BE HELD TO A MINIMUM. FOR CONVENTIONAL TRAILERS, REAR BLOCKING MUST CONTACT THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. FOR THE TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES, CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE HOLE SPACING IN THE CROSS MEMBER ATTACHMENT FACILITY PERMITS. EACH CROSS MEMBER WILL BE INSTALLED WITH THE ENDS ATTACHED NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE TRAILER). CROSS MEMBERS IN EMPTY TRAILERS AND THOSE NOT IN USE IN LOADED TRAILERS MUST BE SECURED FOR SHIPMENT. COMPONENTS ASSIGNED TO EACH TRAILER MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
- F. SELECTION OF A VEHICLE TO BE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 213, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- G. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER LOAD ACCORDINGLY.
- H. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER USED OR THE QUANTITY TO BE SHIPPED. COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED MAY BE USED; HOWEVER, THE APPROVED METHODS SHOWN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- J. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. SEE THE PROCEDURES FOR "SHIPMENT OF A PARTIAL PALLET UNIT" DETAIL AND SPECIAL NOTES ON PAGE 11.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH THE DESIGNATED ITEMS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

(CONTINUED AT RIGHT)

## MATERIAL SPECIFICATIONS

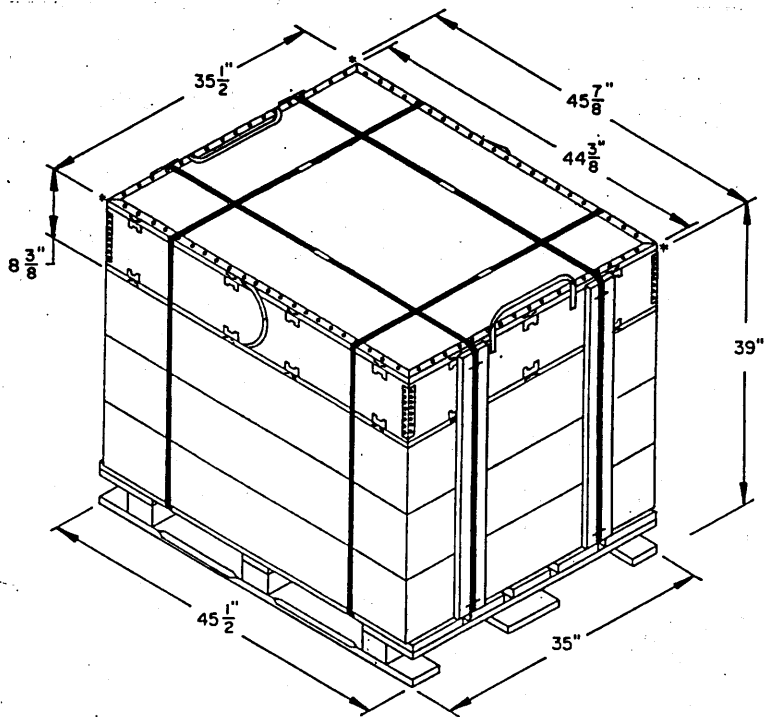
- LUMBER -----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS -----: FED SPEC FF-N-105; COMMON.
- STRAPPING, STEEL -----: FED SPEC QQ-S-781; CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP -----: FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR IV, CLASS H, FINISH A, B (GRADE 2), OR C.
- TYGARD -----: POLYESTER YARN, 1,100 POUNDS/INCH OF WIDTH STRENGTH.
- ADHESIVE -----: TYGARD ADHESIVE.

## (GENERAL NOTES CONTINUED)

- M. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 13 FOR GUIDANCE.
- N. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH, ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- O. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED TRAILER LOADS SHOWN IN THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCOC PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- P. ALL LOADS ARE SHOWN IN TRAILERS HAVING ROUNDED CORNERS AT THE FORWARD END. IF THE CONVENTIONAL VAN TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, OMIT THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED (1) AND POSITION THE PALLET UNITS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER. OMIT CROSS MEMBERS IN THE FORWARD END OF MECHANICAL VAN TRAILERS HAVING A SQUARE FRONT.
- Q. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, END WALLS, AND ROOF, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- R. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- S. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.

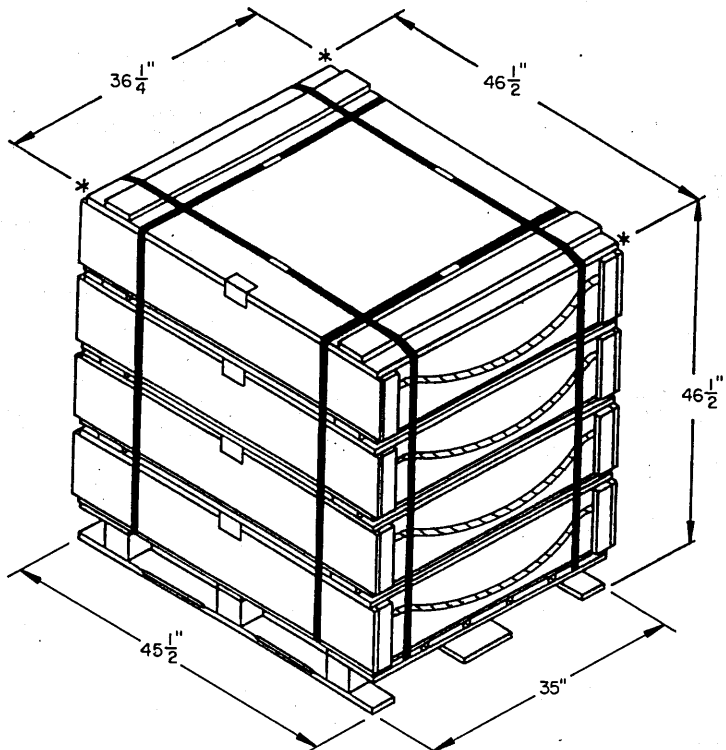
## REVISION

- REVISION NO. 1, DATED SEPTEMBER 1989, CONSISTS OF:  
ADDING LOADING PROCEDURES FOR "PALLET UNIT B".



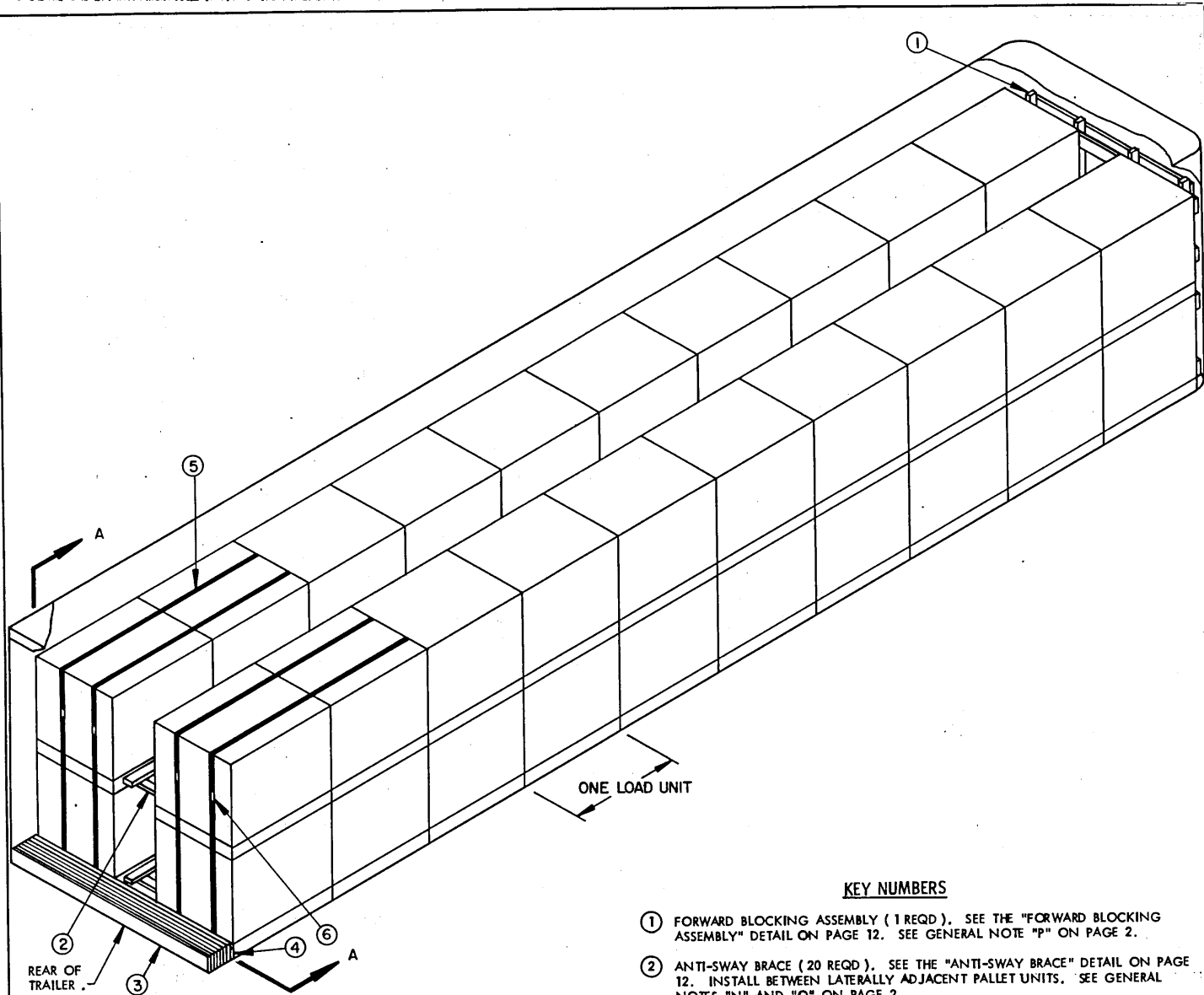
**PALLET UNIT A**

BOXES ----- 4 EACH @ 113 LBS (APPROX)  
 CUBE ----- 36.8 CUBIC FEET (APPROX)  
 GROSS WEIGHT ----- 529 LBS (APPROX)

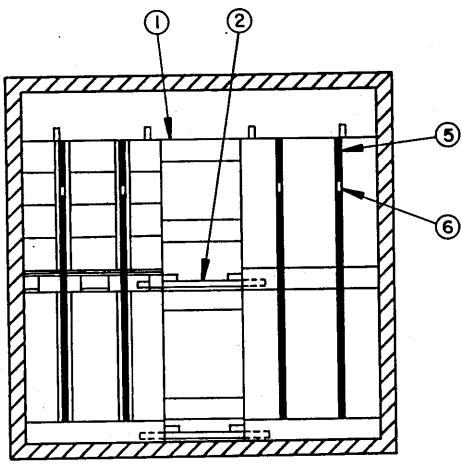


**PALLET UNIT B**

BOXES ----- 4 EACH @ 150 LBS (APPROX)  
 CUBE ----- 45.4 CUBIC FEET (APPROX)  
 GROSS WEIGHT ----- 670 LBS (APPROX)



ISOMETRIC VIEW



SECTION A-A

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY ( 1 REQD ). SEE THE "FORWARD BLOCKING ASSEMBLY" DETAIL ON PAGE 12. SEE GENERAL NOTE "P" ON PAGE 2.
- ② ANTI-SWAY BRACE ( 20 REQD ). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ SOLID FILL, 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH ( AS REQUIRED TO FILL THE VOID AT THE REAR OF THE LOAD ). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 3 ON PAGE 5.
- ④ SOLID FILL, 4" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH ( AS REQUIRED TO CONTACT PALLET BASE ). NAIL TO PIECE MARKED ③ W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 5 ON PAGE 5.
- ⑤ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 29'-0" LONG STEEL STRAPPING ( 4 REQD ). INSTALL AS SHOWN TO SECURE TWO PALLET UNITS IN THE SECOND LAYER TO TWO PALLET UNITS IN THE FIRST LAYER.
- ⑥ SEAL FOR 1-1/4" STRAPPING ( 4 REQD, 1/PER STRAP ). DOUBLE NOTCH EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

40-UNIT LOAD IN A 40'-0" LONG BY 7'-6" WIDE CONVENTIONAL VAN TRAILER

**SPECIAL NOTES:**

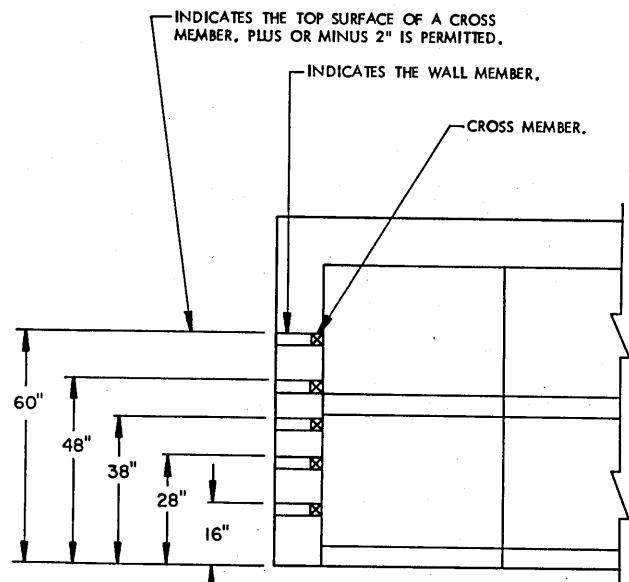
1. A 40-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER HAVING ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS MAY BE USED.
2. PALLET UNIT "A" IS SHOWN IN THE LOAD DETAIL ON PAGE 4. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE TO PALLET UNIT "B". NOTE: WHEN LOADING PALLET UNIT "B", IT MAY BE NECESSARY TO OMIT THE TWO REAR MOST PALLET UNITS IN THE SECOND LAYER, DEPENDING ON FINAL LOAD CONFIGURATION AND TRAILER HEIGHT. SEE SPECIAL NOTE 4.
3. IF THE VOID AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR, MEASURES 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE SOLID FILL REAR BLOCKING ASSEMBLY, PIECES MARKED ③ AND ④ ON PAGE 4. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "ALTERNATIVE REAR BLOCKING ASSEMBLY" AS DETAILED ON PAGE 12.
4. WHEN OMITTING LESS THAN 20 PALLET UNITS, A PALLET UNIT AT THE END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE UNITIZED TO A PALLET UNIT IN THE FIRST LAYER.
5. IF THE PALLET BASE IS FLUSH WITH THE ENDS OF THE BOXES, PIECES MARKED ④ MAY BE OMITTED.
6. IF AN ODD NUMBER OF PALLET UNITS ARE OMITTED FROM THE DEPICTED LOAD, THE PALLET UNIT IN THE SECOND LAYER THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE MUST BE SECURED BY INSTALLING TWO BUNDLING STRAPS AROUND THAT STACK AND THE STACK LONGITUDINALLY ADJACENT.
7. WHEN OMITTING MORE THAN 20 PALLET UNITS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 8 AND 9.
8. REFER TO PAGE 11 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
9. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 14 AND 15 FOR GUIDANCE. IF THERE IS NOT A NAILABLE AREA AT THE REAR OF THE TRUCK, ONE LOAD UNIT MUST BE ELIMINATED WHEN USING THE NAILED-HEADER METHOD WITH THE LOAD DEPICTED ON PAGE 4. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
10. IF THE TRAILER BEING LOADED IS EQUIPPED WITH MECHANICAL BRACING DEVICES, SUCH AS WALL BELT RAILS AND LOAD BLOCKING CROSS MEMBERS, WHICH CONFORM TO SPECIFICATIONS SET FORTH WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C AND APPENDICES THERETO, THEY MAY BE USED AT THE REAR OF THE LOAD AS SHOWN IN THE "PARTIAL ELEVATION VIEW" ON THIS PAGE. SEE GENERAL NOTES "D" AND "E" ON PAGE 2. AND SPECIAL NOTE 11 BELOW.
11. WHEN USING MECHANICAL BRACING DEVICES IN A TRAILER LOAD OF PALLET UNIT "B" UNITS, THE 38" HIGH CROSS MEMBER DEPICTED IN THE "PARTIAL ELEVATION VIEW" AT RIGHT WILL BE RE-LOCATED AT THE 48" HIGH WALL BELT RAIL. NOTE: FILL MATERIAL CONSISTING OF PLYWOOD OR NOMINAL LUMBER WILL BE USED, AS REQUIRED, TO INSURE THAT THE CROSS MEMBER CONTACTS EITHER THE BOXES OR THE PALLET.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	8	3
2" X 4"	251	167
2" X 6"	99	99
NAILS	NO. REQD	POUNDS
10d (3")	352	6
STEEL STRAPPING, 1-1/4" X .035" OR .031" ----- 116' REQD ----- 17 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL		

**LOAD AS SHOWN**

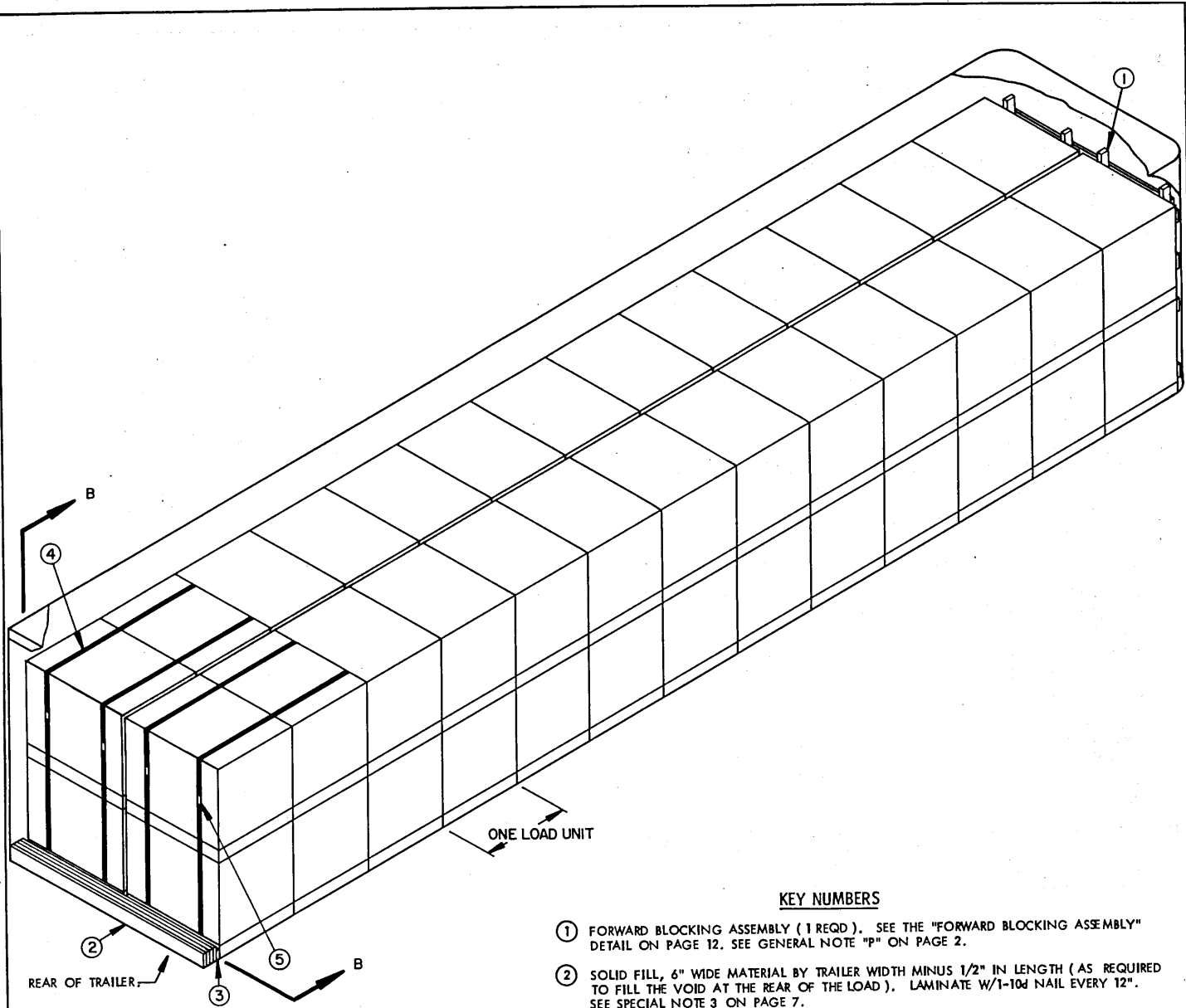
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	40 -----	21,160 LBS
DUNNAGE -----	-----	567 LBS
<b>TOTAL WEIGHT -----</b>	<b>-----</b>	<b>21,727 LBS</b>

**40-UNIT LOAD IN A 40'-0" LONG BY 7'-6" WIDE CONVENTIONAL VAN TRAILER**



**PARTIAL ELEVATION VIEW**

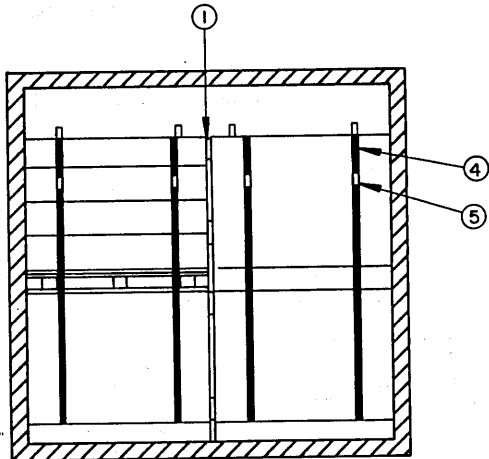
THE VIEW SHOWN ABOVE INDICATES THE REAR PORTION OF THE LOAD SHOWN ON PAGE 4. SEE SPECIAL NOTE 10 ABOVE.



ISOMETRIC VIEW

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY ( 1 REQD ). SEE THE "FORWARD BLOCKING ASSEMBLY" DETAIL ON PAGE 12. SEE GENERAL NOTE "P" ON PAGE 2.
- ② SOLID FILL, 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH ( AS REQUIRED TO FILL THE VOID AT THE REAR OF THE LOAD ). LAMINATE W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 3 ON PAGE 7.
- ③ SOLID FILL, 4" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH ( AS REQUIRED TO CONTACT PALLET BASE ). NAIL TO PIECE MARKED ② W/1-10d NAIL EVERY 12" SEE SPECIAL NOTE 4 ON PAGE 7.
- ④ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 25'-6" LONG STEEL STRAPPING ( 4 REQD ). INSTALL AS SHOWN TO SECURE TWO PALLET UNITS IN THE SECOND LAYER TO TWO PALLET UNITS IN THE FIRST LAYER.
- ⑤ SEAL FOR 1-1/4" STRAPPING ( 4 REQD, 1 PER STRAP ). DOUBLE NOTCH EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION B-B

52-UNIT LOAD IN A 40'-0" LONG BY 7'-10" WIDE CONVENTIONAL VAN TRAILER

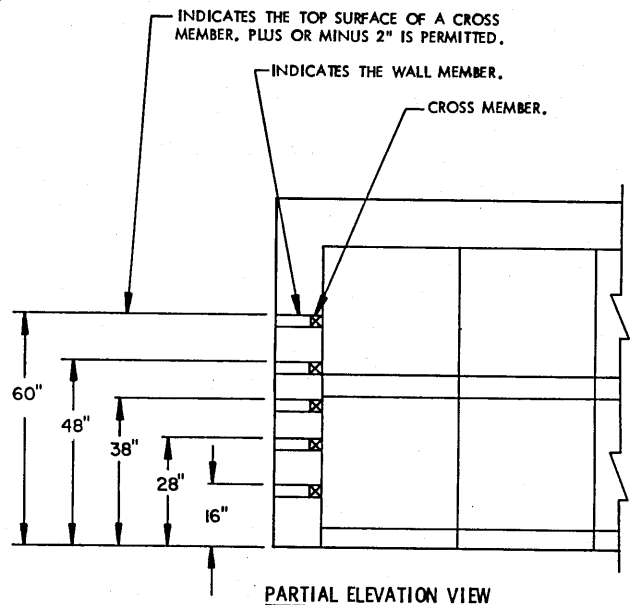
**SPECIAL NOTES:**

1. A 52-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-10" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER HAVING ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS MAY BE USED; TRAILERS NARROWER THAN 7'-8" WIDE CAN NOT BE USED FOR THIS DEPICTED LOAD CONFIGURATION WHEN LOADING PALLET UNIT "A" AND TRAILERS NARROWER THAN 7'-10" WIDE CANNOT BE USED WHEN LOADING PALLET UNIT "B".
2. PALLET UNIT "A" IS SHOWN IN THE LOAD DETAIL ON PAGE 6. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE TO PALLET UNIT "B". NOTE: WHEN LOADING PALLET UNIT "B", IT MAY BE NECESSARY TO OMIT ONE LOAD UNIT, DEPENDING ON THE FINAL LOAD CONFIGURATION AND THE LENGTH OF THE TRAILER; SEE SPECIAL NOTE 3.
3. IF THE VOID AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR, MEASURES 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE SOLID FILL REAR BLOCKING ASSEMBLY, PIECES MARKED ② AND ③ ON PAGE 6. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "ALTERNATIVE REAR BLOCKING ASSEMBLY" AS DETAILED ON PAGE 12.
4. IF THE PALLET BASE IS FLUSH WITH THE ENDS OF THE BOXES, PIECE MARKED ③ MAY BE OMITTED.
5. WHEN OMITTING LESS THAN 26 PALLET UNITS, A PALLET UNIT AT THE END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE UNITIZED TO A PALLET UNIT IN THE FIRST LAYER.
6. IF AN ODD NUMBER OF PALLET UNITS ARE OMITTED FROM THE DEPICTED LOAD, THE PALLET UNIT IN THE SECOND LAYER THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE MUST BE SECURED BY INSTALLING TWO BUNDLING STRAPS AROUND THAT STACK AND THE LONGITUDINALLY ADJACENT STACK.
7. WHEN OMITTING MORE THAN 26 PALLET UNITS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 8 AND 9.
8. REFER TO PAGE 11 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
9. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 14 AND 15 FOR GUIDANCE. IF THERE IS NOT A NAILABLE AREA AT THE REAR OF THE TRUCK, ONE LOAD UNIT MUST BE ELIMINATED WHEN USING THE NAILED-HEADER METHOD WITH THE LOAD DEPICTED ON PAGE 6. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
10. IF THE TRAILER BEING LOADED IS EQUIPPED WITH MECHANICAL BRACING DEVICES, SUCH AS WALL BELT RAILS AND LOAD BLOCKING CROSS MEMBERS, WHICH CONFORM TO SPECIFICATIONS SET FORTH WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C AND APPENDICES THERETO, THEY MAY BE USED AT THE REAR OF THE LOAD AS SHOWN IN THE "PARTIAL ELEVATION VIEW" ON THIS PAGE. SEE GENERAL NOTES "D" AND "E" ON PAGE 2. AND SPECIAL NOTE 12 BELOW.
11. TRAILERS HAVING INSIDE WIDTHS GREATER THAN 97" CAN BE USED FOR SHIPPING THE LOAD DEPICTED ON PAGE 6. HOWEVER, CENTER FILL ASSEMBLIES AS DETAILED ON PAGE 13 MUST BE INSTALLED BETWEEN LATERALLY ADJACENT PALLET UNITS TO PREVENT LATERAL DISPLACEMENT OF THE UNITS DURING SHIPMENT WHEN THE LATERAL DISTANCE BETWEEN PALLET UNITS IS 6" OR GREATER. ALL OTHER DUNNAGE SPECIFIED FOR THE LOAD ON PAGE 6 WILL REMAIN UNCHANGED.
12. WHEN USING MECHANICAL BRACING DEVICES IN A TRAILER LOAD OF PALLET UNIT "B" UNITS, THE 38" HIGH CROSS MEMBER DEPICTED IN THE "PARTIAL ELEVATION VIEW" AT RIGHT WILL BE RE-LOCATED AT THE 48" HIGH WALL BELT RAIL. NOTE: FILL MATERIAL CONSISTING OF PLYWOOD OR NOMINAL LUMBER WILL BE USED, AS REQUIRED, TO INSURE THAT THE CROSS MEMBER CONTACTS EITHER THE BOXES OR THE PALLET.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	8	3
2" X 4"	27	18
2" X 6"	88	88
NAILS	NO. REQD	POUNDS
10d (3")	96	2
STEEL STRAPPING		
1-1/4" X .035" OR .031" -----	102' REQD -----	15 LBS
SEAL FOR 1-1/4" STRAPPING ---	4 REQD -----	NIL

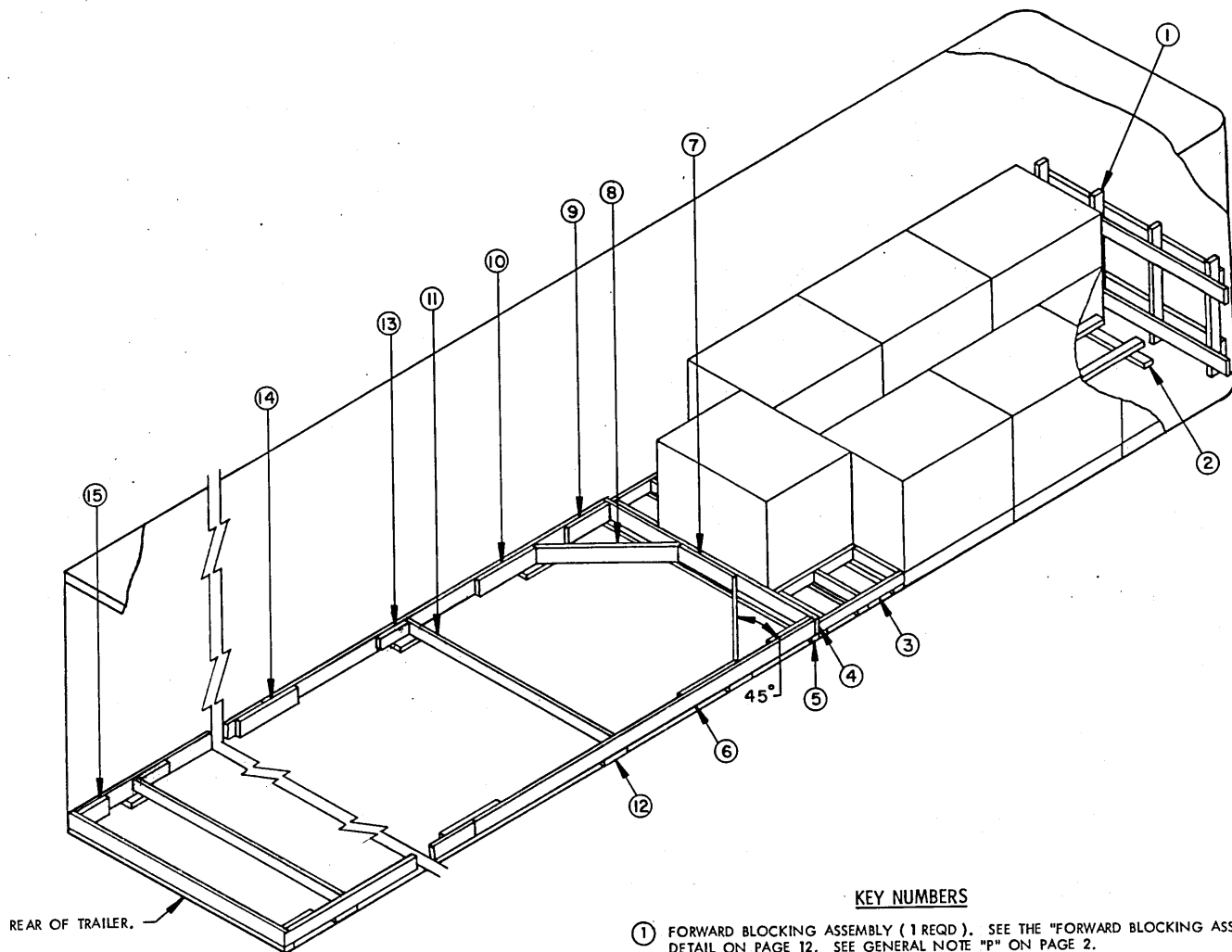
**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	88	27,508 LBS
DUNNAGE -----		235 LBS
<b>TOTAL WEIGHT -----</b>		<b>27,743 LBS</b>



THE VIEW SHOWN ABOVE INDICATES THE REAR PORTION OF THE LOAD SHOWN ON PAGE 6. SEE SPECIAL NOTE 10 ABOVE.

52-UNIT LOAD IN A 40'-0" LONG BY 7'-10" WIDE CONVENTIONAL VAN TRAILER



ISOMETRIC VIEW

REAR OF TRAILER.

**SPECIAL NOTES:**

1. THESE OUTLOADING PROCEDURES COVER THE USE OF BOTH "K-BRACE" AND NAILED FLOOR LINE BLOCKING IN A 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER WHICH IS EQUIPPED WITH OR WITHOUT NAILABLE FLOORS AND REAR CORNER POSTS. WIDER OR NARROWER TRAILERS MAY BE USED. SEE SPECIAL NOTES 3 AND 4.
2. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED ④ THRU ⑮, IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.
3. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 14 AND 15 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS, AND MAY BE USED IN LIEU OF PIECES MARKED ④ THRU ⑮ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS. SEE SPECIAL NOTE 4.
4. WHEN THE NAILED-HEADER METHOD OF BRACING SHOWN ON PAGE 14 IS APPLIED FOR THE BRACING OF THE DEPICTED 7-UNIT LOAD OR ANY ODD NUMBERED QUANTITY, ONLY THE DOUBLED 2" X 4" PIECES ARE REQUIRED; OMIT THE HEADER ASSEMBLY. WHEN SHIPPING AN EVEN NUMBERED QUANTITY, THE NAILED-HEADER METHOD WILL APPLY AS IS.

(KEY NUMBERS CONTINUED)

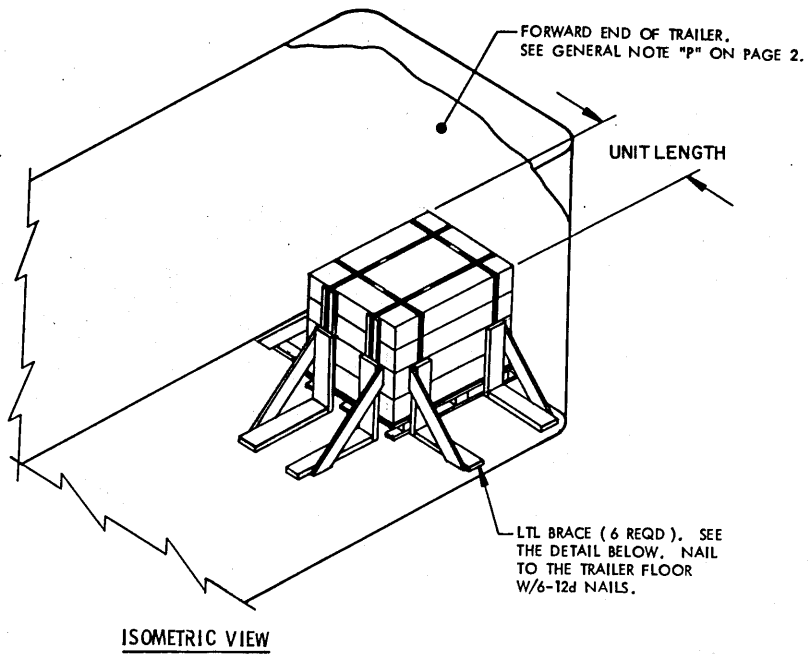
- ⑬ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/3-10d NAILS.
- ⑭ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON A JOINT OF PIECES MARKED ⑥ AND NAIL W/4-10d NAILS AT EACH END.
- ⑮ STRUT RETAINING BLOCK, 2" X 6" X 12" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④, W/3-12d NAILS.

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE "FORWARD BLOCKING ASSEMBLY" DETAIL ON PAGE 12. SEE GENERAL NOTE "P" ON PAGE 2.
- ② ANTI-SWAY BRACE (3 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ SIDE BLOCKING ASSEMBLY (2 REQD). SEE THE "SIDE BLOCKING ASSEMBLY" DETAIL ON PAGE 13.
- ④ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD).
- ⑤ HEADER AND SIDE STRUT SUPPORT, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO BOTTOM EDGE OF A HEADER, PIECE MARKED ④, W/1-10d NAIL EVERY 12".
- ⑥ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN HEADERS, PIECES MARKED ④ (2 REQD).
- ⑦ CENTER CLEAT, 2" X 6" X 24" (1 REQD). NAIL TO THE HEADER, PIECE MARKED ④, W/8-10d NAILS.
- ⑧ DIAGONAL BRACE, 2" X 6" BY CUT-TO-FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④, AND SIDE STRUT, PIECE MARKED ⑥, W/2-16d NAILS AT EACH END.
- ⑨ POCKET CLEAT, 2" X 6" X 18" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/5-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④, W/3-12d NAILS.
- ⑩ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). POSITION AGAINST END OF DIAGONAL BRACE, PIECE MARKED ⑧, AND NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/8-10d NAILS.
- ⑪ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT-TO-FIT) (MINIMUM OF 1 REQD). INSTALL ONE (1) NEAR END OF SIDE STRUTS, PIECES MARKED ⑥, AS SHOWN. ONE (1) ADDITIONAL PIECE REQUIRED FOR EVERY 7'-0" OF SIDE STRUT LENGTH. NAIL TO STRUT RETAINING BLOCKS, PIECES MARKED ⑮, AND/OR TO STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑬, W/2-12d NAILS AT EACH END.
- ⑫ RISER PIECE, 2" X 4" X 9" (AS REQD). POSITION SO AS TO BE CENTERED UNDER THE JOINT OF A DIAGONAL BRACE AND A BACK-UP CLEAT, PIECES MARKED ⑧ AND ⑩ AND/OR UNDER THE JOINT OF THE STRUT BRACE AND THE STRUT BRACE RETAINING CLEAT, PIECES MARKED ⑪ AND ⑬. NAIL TO A SIDE STRUT, PIECE MARKED ⑥ W/2-10d NAILS.

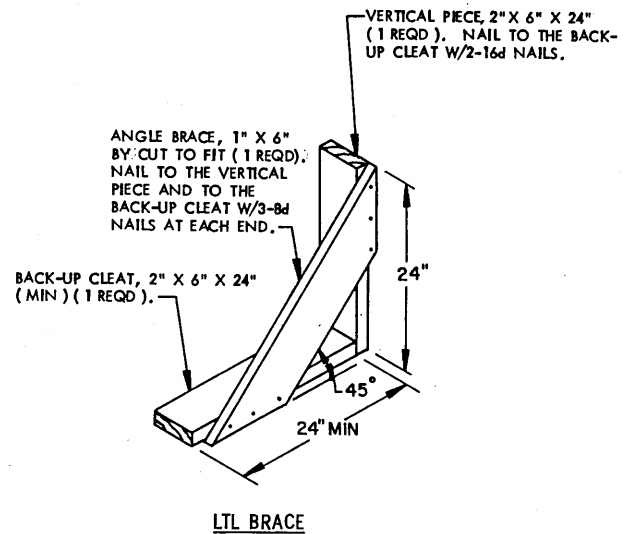
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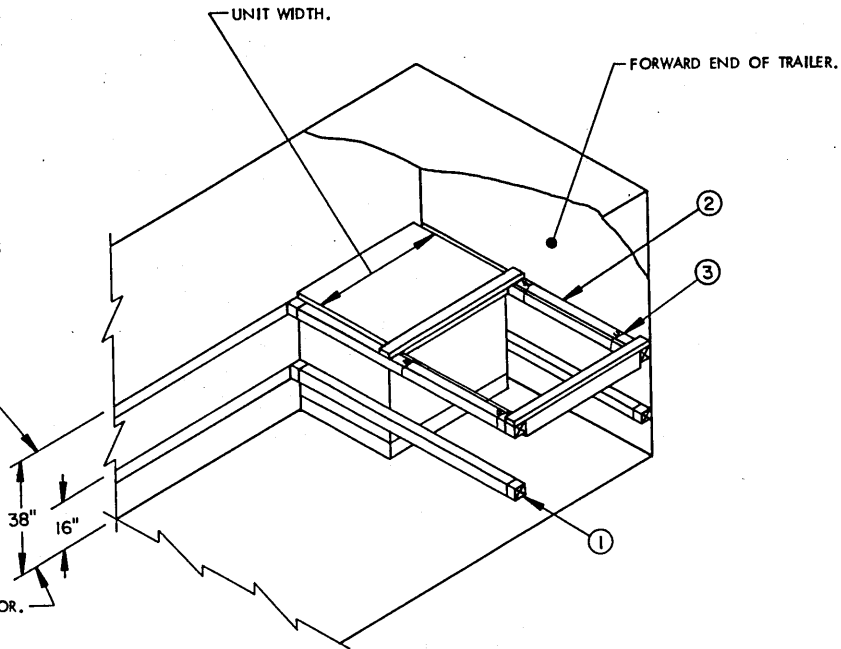
**SPECIAL NOTES:**

1. A 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS MAY BE USED.
2. THE POSITIONING OF THE PALLET UNIT IS OPTIONAL. THE PALLET UNIT MAY BE POSITIONED IN THE CORNER OF THE TRAILER, OMITTING TWO LTL BRACES. IF THE TRAILER DOES NOT HAVE A SQUARE FRONT, HOWEVER, THE PALLET UNIT MUST BE POSITIONED AS SHOWN.
3. EACH LTL BRACE, AS APPLIED FOR LONGITUDINAL BRACING, WILL SUPPORT 2,000 POUNDS OF LADING; HOWEVER, NOT LESS THAN TWO BRACES WILL BE USED AGAINST EACH PALLETIZED UNIT ACROSS THE WIDTH OF THE TRAILER.
4. MORE THAN ONE PALLET UNIT CAN BE SHIPPED PROVIDING THE CAPACITY OF THE LTL BRACES IS NOT EXCEEDED. THE LOAD SHOULD BE FORMED IN TWO ROWS, WITH THE UNITS POSITIONED AGAINST THE OPPOSITE SIDE WALLS. THE PROPER ANTI-SWAY BRACES OR CRIB FILL MUST BE INSTALLED AS REQUIRED. SEE THE APPROPRIATE DETAILS ON PAGES 4 AND 6.
5. PALLET UNITS MAY BE POSITIONED WITH THE UNIT WIDTH PARALLEL TO THE FRONT WALL OF THE TRAILER, PROVIDING TRAILER WIDTH IS SUFFICIENT TO ALLOW INSTALLATION OF THE REQUIRED LTL BRACES. PALLET UNITS MAY ALSO BE POSITIONED IN THIS MANNER WHEN SHIPPING MORE THAN ONE PALLET UNIT.



THESE DIMENSIONED HEIGHTS SPECIFY THE DISTANCE THE TOP SURFACE OF A CROSS MEMBER IS TO BE ABOVE THE TRAILER FLOOR.

INDICATES TRAILER FLOOR.



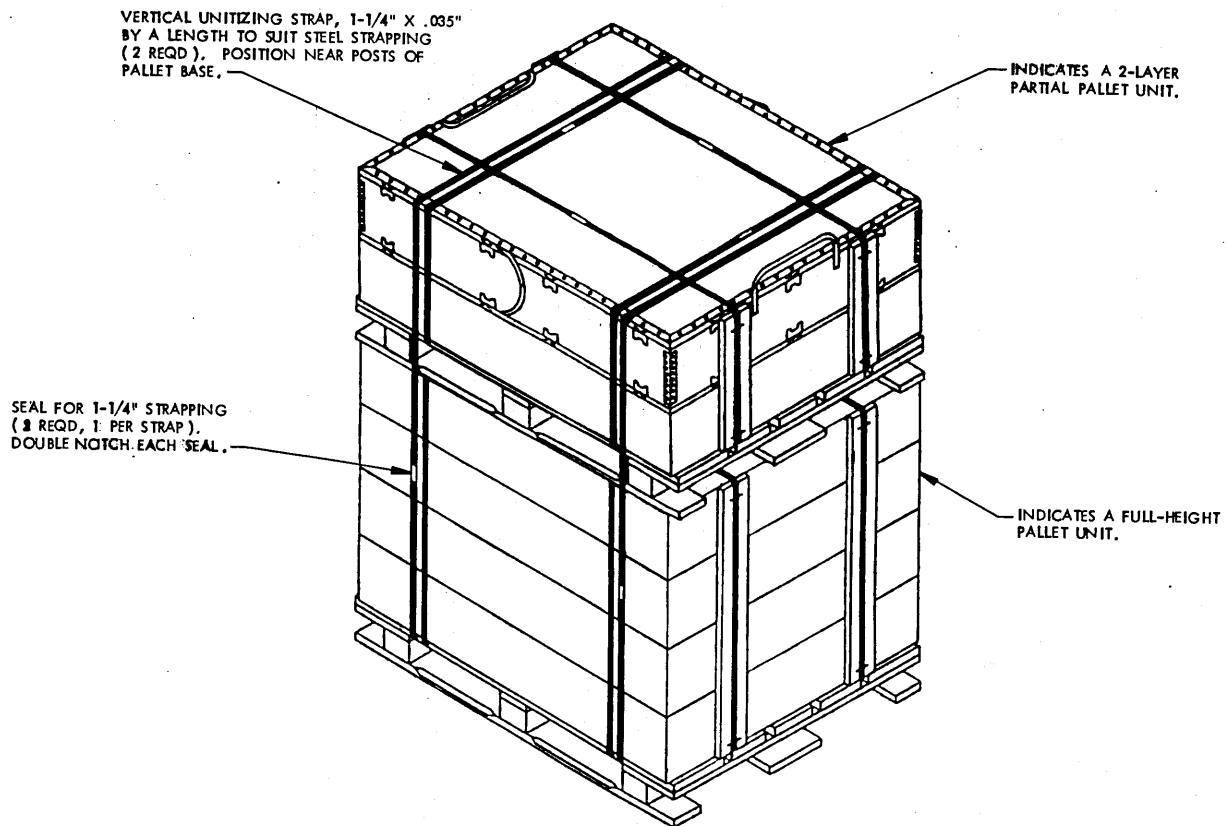
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES DEPICT A VAN TRAILER WHICH IS EQUIPPED WITH MECHANICAL BRACING DEVICES.
2. A TYPICAL LTL LOAD OF ONE PALLET UNIT IS SHOWN; IF TWO PALLET UNITS ARE TO BE TRANSPORTED, POSITION THE UNITS TWO ACROSS THE WIDTH OF THE TRAILER. OMIT THE SPACER ASSEMBLY AND TIE WIRES, PIECES MARKED ② AND ③.  
NOTE: WHEN LOADING TWO PALLET UNITS ACROSS THE WIDTH OF THE TRAILER, POSITION THE UNITS AGAINST THE FORWARD END WALL (UNLESS THE TRAILER HAS ROUNDED CORNERS) AND OMIT THE TWO CROSS MEMBERS AT THE FORWARD END. INSTALL AN ANTI-SWAY BRACE OR CRIB FILL BETWEEN THE UNITS, AS REQUIRED (SEE PAGES 4 AND 6 FOR REQUIREMENTS).
3. PALLET UNITS MAY BE POSITIONED WITH THE UNIT WIDTH PARALLEL TO THE FORWARD END WALL OF THE TRAILER, PROVIDING THE TRAILER WIDTH IS SUFFICIENT.

KEY NUMBERS

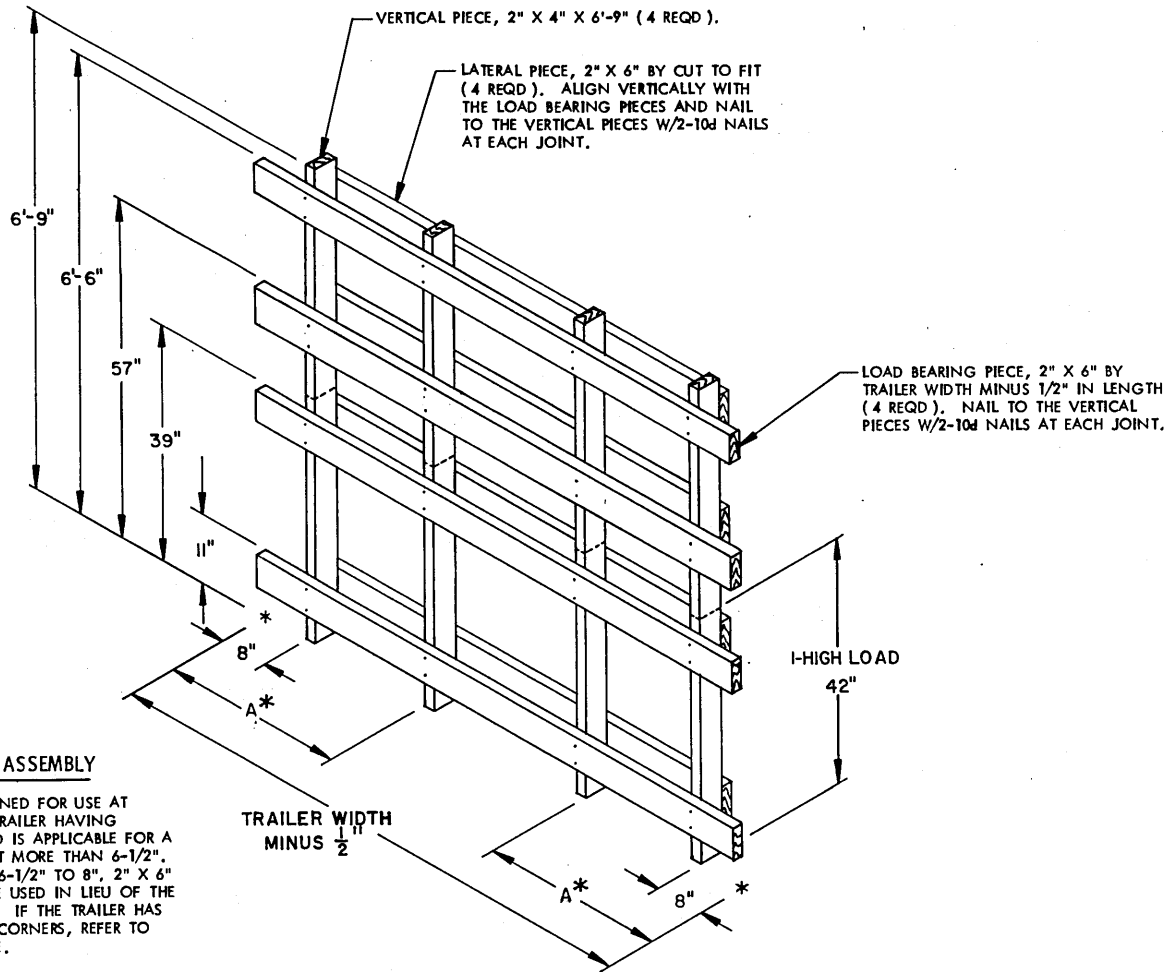
- ① CROSS MEMBER (4 REQD). POSITION AT THE HEIGHTS SPECIFIED ABOVE. SEE GENERAL NOTES "D" AND "E" ON PAGE 2.
- ② SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 13.
- ③ TIE WIRE, NO. 14 GAGE WIRE (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE CROSS MEMBER AND SPACER ASSEMBLY. BRING THE ENDS TOGETHER AND TWIST TAUT.



SECUREMENT OF A PARTIAL PALLET UNIT  
ON TOP OF A FULL PALLET UNIT

**SPECIAL NOTES:**

1. THE VIEW SHOWN ABOVE DEPICTS A PARTIAL 2-LAYER PALLET UNIT POSITIONED ON TOP OF A FULL-HEIGHT PALLET UNIT AND UNITIZED WITH TWO VERTICAL UNITIZING STRAPS. PLACEMENT WITHIN THE LOAD IS OPTIONAL, EXCEPT THAT IT WILL NOT BE POSITIONED IN A LOWER LAYER OR WITHIN A STACK THAT IS UNITIZED (AT THE END OF THE LOAD).
2. SHIPMENTS OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL UNITS WITHIN A LOAD.
3. THE "SHIPMENT OF A PARTIAL PALLET UNIT" PROCEDURES ON THIS PAGE ARE APPLICABLE FOR LOADS IN CONVENTIONAL TYPE VAN TRAILERS AND IN VAN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.
4. THE PARTIAL PALLET UNIT DEPICTED ABOVE MUST NOT EXCEED TWO LAYERS OF BOXES.
5. PALLET UNIT "A" IS DEPICTED ABOVE. THESE PROCEDURES MAY ALSO BE USED FOR SHIPMENT OF A PARTIAL PALLET UNIT "B".



**FORWARD BLOCKING ASSEMBLY**

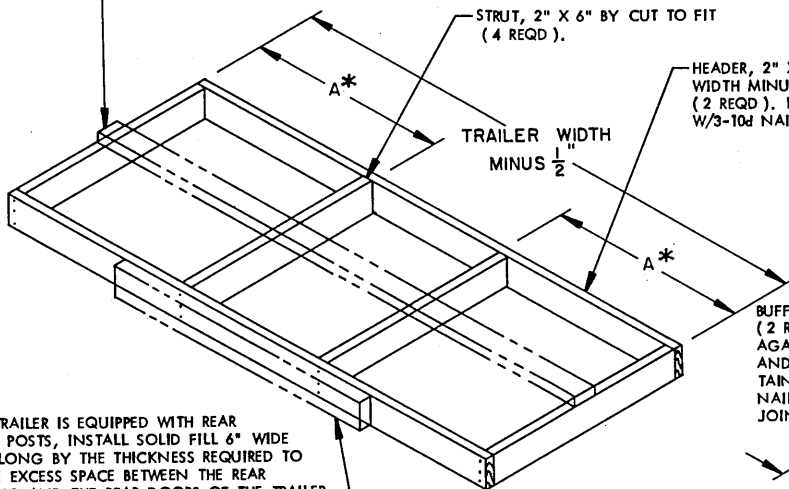
THIS ASSEMBLY IS DESIGNED FOR USE AT THE FRONT END OF A TRAILER HAVING ROUNDED CORNERS AND IS APPLICABLE FOR A CORNER RADIUS OF NOT MORE THAN 6-1/2". IF THE RADIUS IS FROM 6-1/2" TO 8", 2" X 6" VERTICAL PIECES WILL BE USED IN LIEU OF THE 2" X 4" PIECES SHOWN. IF THE TRAILER HAS LARGE-ANGLED FRONT CORNERS, REFER TO PAGE 16 FOR GUIDANCE.

STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REQD FOR EVERY 7'-0" OF STRUT LENGTH FOR STRUTS LONGER THAN 7'-0"). NAIL TO THE STRUTS W/2-12d NAILS AT EACH JOINT.

STRUT, 2" X 6" BY CUT TO FIT (4 REQD).

HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

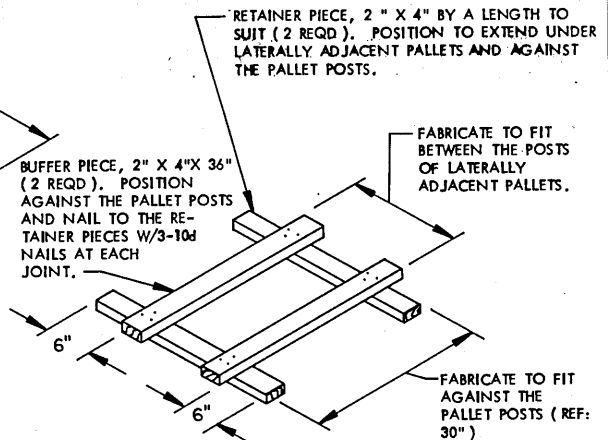
\* NOTE: DIMENSION "A" IS 31" FOR LOADS WITH PALLET UNIT WIDTHS PARALLEL TO THE SIDEWALLS, AND 38" FOR LOADS WITH PALLET UNIT LENGTHS PARALLEL TO THE SIDEWALLS.



IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING AND THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. NAIL TO THE REAR BLOCKING W/4 APPLICABLY SIZED NAILS.

**ALTERNATIVE REAR BLOCKING ASSEMBLY**

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF THE LOAD WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER.

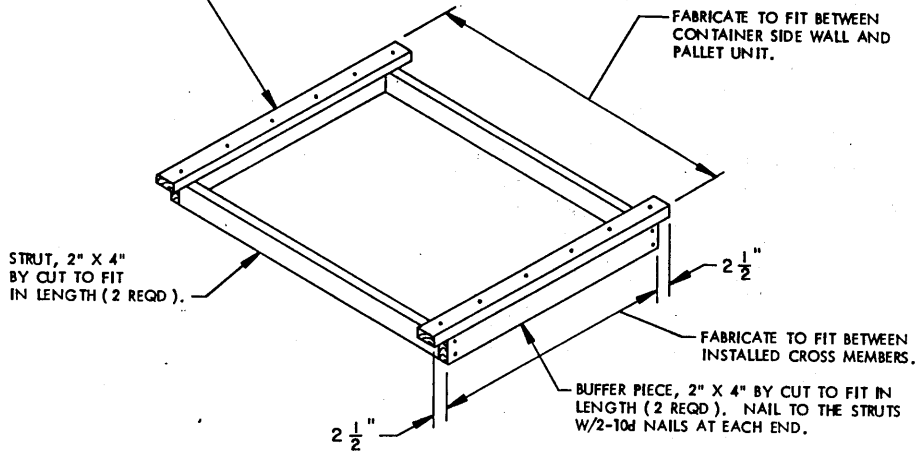


**ANTI-SWAY BRACE**

THIS ANTI-SWAY BRACE MUST BE FABRICATED IN PLACE BETWEEN THE PALLETS.

**DETAILS**

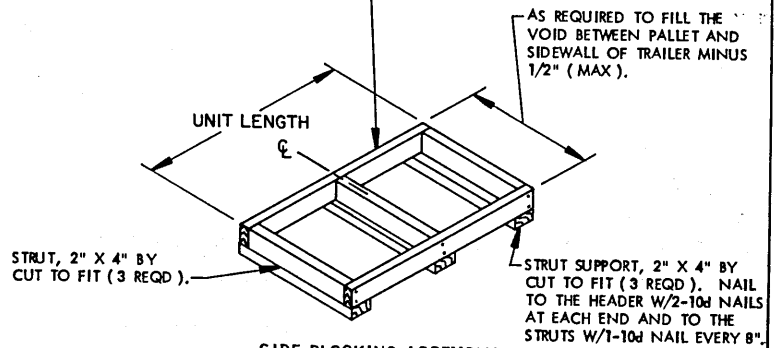
RETAINER PIECE, 2" X 4" BY CUT TO FIT IN LENGTH (2 REQD). NAIL TO THE STRUTS W/1-10d NAIL AT EACH JOINT AND TO THE BUFFER PIECE W/4-10d NAILS.



**SPACER ASSEMBLY A**

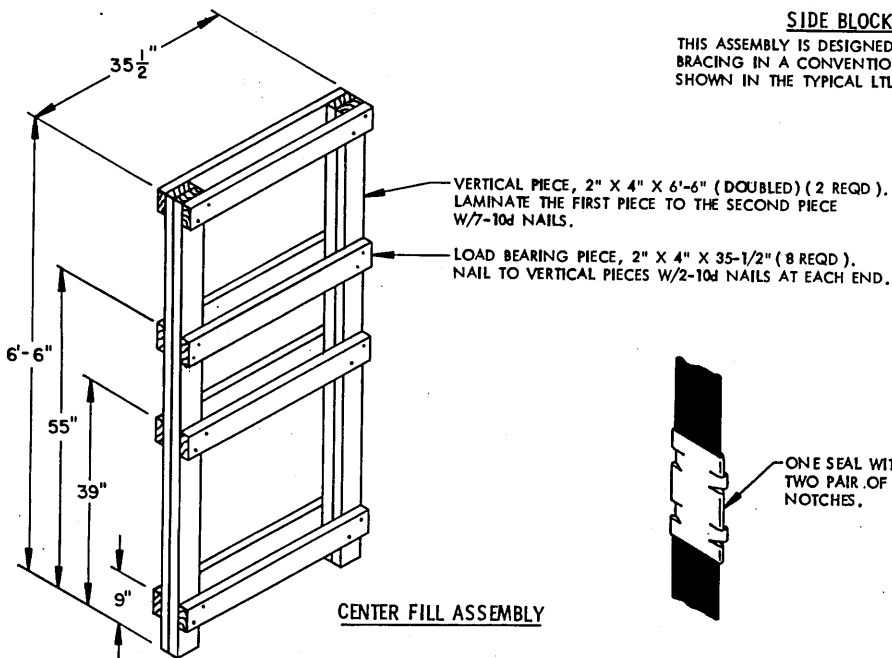
THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES AS SHOWN IN THE TYPICAL LTL LOAD ON PAGE 10.

HEADER, 2" X 4" BY UNIT LENGTH (2 REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.

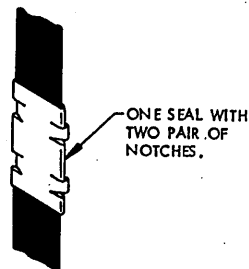


**SIDE BLOCKING ASSEMBLY**

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN A CONVENTIONAL VAN TRAILER AS SHOWN IN THE TYPICAL LTL LOAD ON PAGE 8.



**CENTER FILL ASSEMBLY**



**STRAP JOINT A**

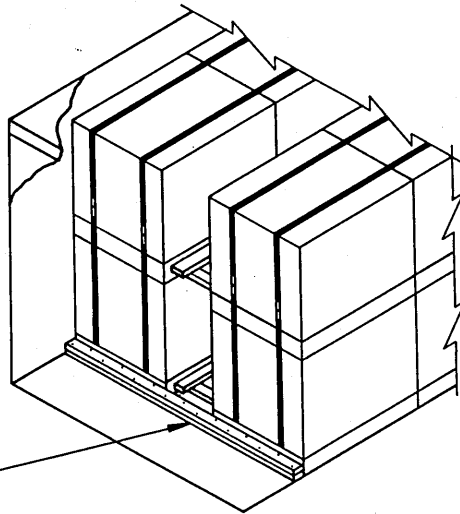
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



**STRAP JOINT B**

METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

**DETAILS**



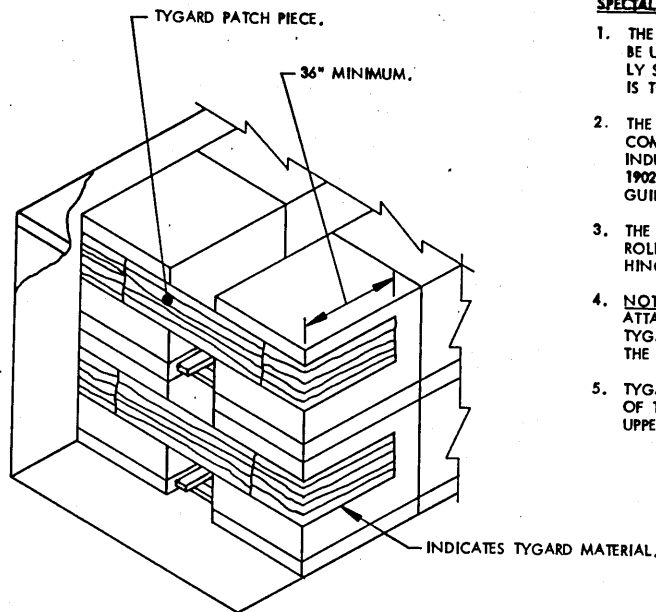
HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET UNITS. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/15-10d NAILS (1 EVERY 6"). NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

NAILED-HEADER METHOD

SPECIAL NOTES: :

1. THE NAILED-HEADER METHOD OF REAR BLOCKING DEPICTED ABOVE CAN ONLY BE USED IN TRAILERS HAVING A NAILABLE FLOOR AREA BETWEEN THE LADING AND THE METAL THRESHOLD, OR A THRESHOLD PLATE IF THE TRAILER IS SO EQUIPPED, OF AT LEAST FOURTEEN INCHES (14").
2. THE NAILED-HEADER METHOD OF REAR BLOCKING IS ADEQUATE FOR THE RETENTION OF THE MAXIMUM WEIGHT LOAD.
3. THE NAILED-HEADER METHOD, ALTHOUGH DESIGNED ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

NAILED-HEADER METHOD  
PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS



TYGARD METHOD

SPECIAL NOTES:

1. THE TYGARD METHOD OF REAR BLOCKING DEPICTED AT LEFT CAN ONLY BE USED IN TRAILERS WHICH HAVE REASONABLY SMOOTH AND ADEQUATELY SECURED SIDEWALL PANELS IN THE AREA WHERE THE TYGARD MATERIAL IS TO BE APPLIED.
2. THE TYGARD MATERIAL AND THE ADHESIVE FOR ATTACHING IT ARE COMMERCIAL PRODUCTS. FOR A SOURCE OF SUPPLY, CONTACT WALNUT INDUSTRIES, INC., 1344 ADAMS ROAD, P.O. BOX "E", BENSALEM, PA 19020-0860, PHONE 1-800-523-6536. APPLICATION INSTRUCTIONS AND GUIDANCE CAN ALSO BE OBTAINED FROM THAT OFFICE.
3. THE TYGARD METHOD, ALTHOUGH ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
4. **NOTICE:** IF THE AREA OF A SIDEWALL WHERE THE TYGARD SHOULD BE ATTACHED IS ROUGH AND/OR BROKEN, THE APPLICABLE PIECE(S) OF TYGARD CAN BE LENGTHENED A SUITABLE AMOUNT AND ATTACHED TO THE SIDEWALL AHEAD OF THE INDICATED PREFERRED LOCATION.
5. TYGARD MATERIAL MUST BE INSTALLED AT ONE LEVEL FOR EACH LAYER OF THE LOAD. THE TYGARD MATERIAL SHOULD BE ALIGNED WITH THE UPPER PORTION OF A LAYER.

RECOMMENDED EQUIPMENT/INSTALLATION PROCEDURES

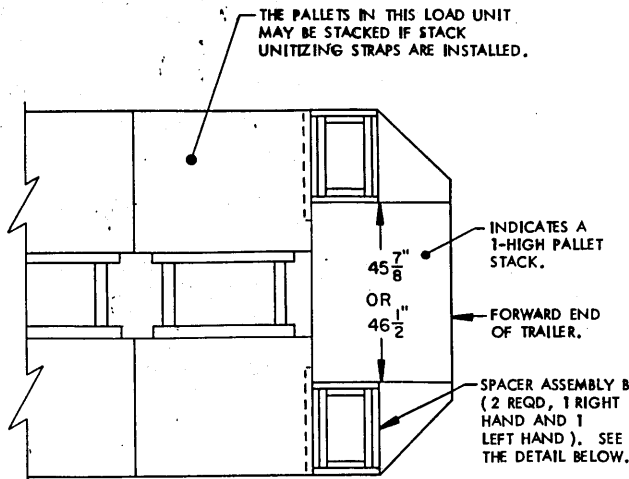
EQUIPMENT REQUIRED

PAINT ROLLER, LATEX  
 PAINT ROLLER PAN  
 TENSIONING ROD/TOOL  
 PRESSURE ROLLER  
 RATCHET WRENCH (12" TO 15" HANDLE)  
 OPEN END OR BOX WRENCH (12" TO 15" HANDLE)  
 SCISSORS OR KNIFE  
 TYGARD (15" WIDE ROLL)  
 TYGARD ADHESIVE

BASIC INSTALLATION GUIDANCE

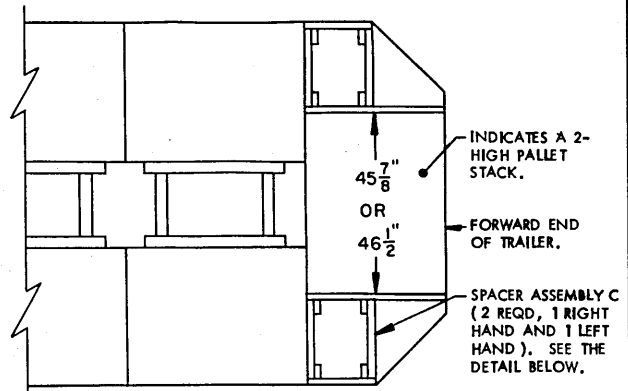
1. CUT TO LENGTH THE REQUIRED NUMBER OF TYGARD PIECES (FROM 2 TO 4 DEPENDING UPON THE LOAD CONFIGURATION) FOR ATTACHMENT TO THE TRAILER SIDEWALL. PIECES WILL BE OF A LENGTH AS REQUIRED TO PROVIDE PROPER BONDING TO THE TRAILER SIDEWALL AND TO EXTEND 60" ACROSS THE REAR OF THE LOAD. ALSO, CUT 72" LONG "PATCH" PIECES OF TYGARD MATERIAL, ONE FOR EACH SET OF TWO PIECES PREVIOUSLY CUT.
2. PRIOR TO POSITIONING OF THE PALLETS IN THE REARMOST LOAD UNIT, APPLY TYGARD ADHESIVE TO THE PROPER PORTIONS OF THE TRAILER SIDEWALLS AND TO THE CORD SIDE OF A CORRESPONDING LENGTH OF EACH OF THE TYGARD PIECES THAT ARE TO BE ATTACHED TO THE SIDEWALLS OF THE TRAILER. ALLOW TIME FOR THE ADHESIVE TO "CURE" BEFORE PLACING A STRIP OF TYGARD ONTO A SIDEWALL (ADHESIVE WILL FEEL ALMOST DRY WHEN TOUCHED). **NOTE:** APPLICATION OF TYGARD IS SIMILAR TO THE APPLICATION OF "FORMICA".
3. APPLY THE TYGARD PIECES TO EACH SIDEWALL OF THE TRAILER SO THAT THE PIECES ARE PARALLEL OR NEARLY PARALLEL TO THE FLOOR. ROLL THE TYGARD WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING IS ACHIEVED. TEMPORARILY SECURE THE LOOSE ENDS TO THE TRAILER SIDEWALL OR TO AN OPEN HINGED TYPE DOOR OR TO THE OUTSIDE WALL, AS APPLICABLE.
4. POSITION THE PALLETS OF THE REARMOST LOAD UNIT INTO THE TRAILER AND INSTALL THE ANTI-SWAY BRACES (AS REQ'D).
5. UNDO THE PREVIOUSLY SECURED LOOSE ENDS AND BRING A SET OF TWO PIECES TOGETHER ACROSS THE REAR OF THE LOAD. POSITION THE TENSIONING ROD SO THAT THE LOOSE ENDS OF THE TYGARD MATERIAL EXTEND THRU THE SLOT IN ROD. USING THE TWO WRENCHES, ROLL UP THE TYGARD TO TENSION IT ACROSS REAR OF THE LOAD. POSITION A WRENCH SO AS TO MAINTAIN THE TENSION IN THE TYGARD PIECES. CUT OFF AND DISCARD EXCESS MATERIAL FROM ONE PIECE OF THE TYGARD.
6. APPLY TYGARD ADHESIVE TO THE TENSIONED TYGARD PIECES AND ALSO TO THE CORD SIDE OF THE PREVIOUSLY CUT "PATCH" PIECE. APPLY THE "PATCH" AND ROLL WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING.

TYGARD METHOD  
PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS



**ALTERNATIVE FORWARD LOADING PATTERN A**

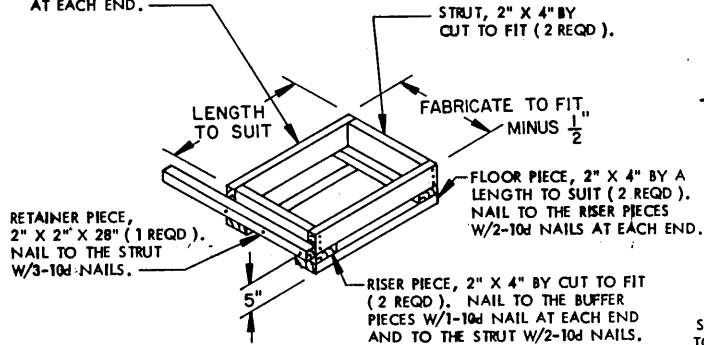
THIS PROCEDURE IS APPLICABLE TO THE LOADING OF ONE (1) PALLET UNIT IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE-ANGLED FRONT CORNERS (REF: 18°). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS OR ANGLED CORNERS OF ANOTHER SIZE.



**ALTERNATIVE FORWARD LOADING PATTERN B**

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF A STACK OF TWO (2) PALLET UNITS IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE-ANGLED FRONT CORNERS (REF: 18°). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS, OR ANGLED CORNERS OF ANOTHER SIZE.

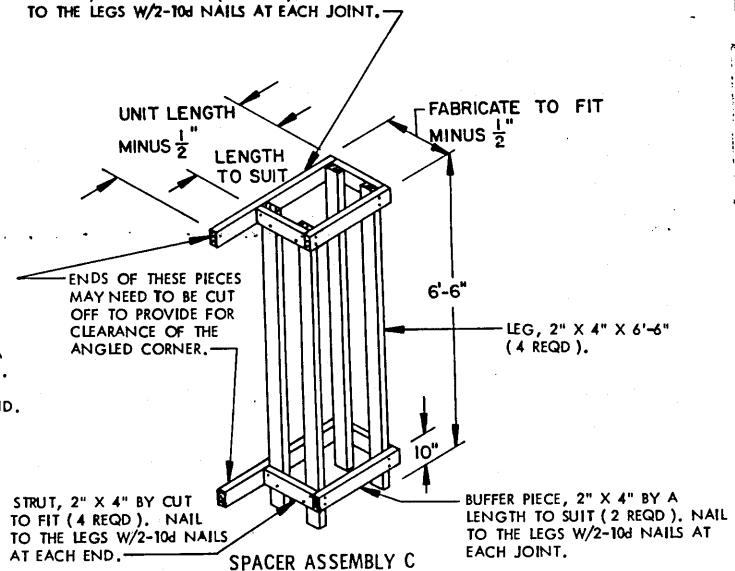
BUFFER PIECE, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH END.



**SPACER ASSEMBLY B**

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A SINGLE PALLET UNIT WHICH IS TURNED 90° FROM THE NORMAL LOADING ORIENTATION AND POSITIONED IN THE FRONT OF AN ANGLED-CORNER CONVENTIONAL VAN TRAILER AS SHOWN IN THE "ALTERNATIVE FORWARD LOADING PATTERN A" VIEW ABOVE.

RETAINER PIECE, 2" X 4" BY UNIT LENGTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO THE LEGS W/2-10d NAILS AT EACH JOINT.



**SPACER ASSEMBLY C**

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A 2-HIGH PALLET STACK WHICH IS TURNED 90° FROM THE NORMAL LOADING ORIENTATION AND POSITIONED IN THE FRONT OF AN ANGLED-CORNER CONVENTIONAL VAN TRAILER AS SHOWN IN THE "ALTERNATIVE FORWARD LOADING PATTERN B" VIEW ABOVE. NOTE THAT THIS VIEW DEPICTS THE ASSEMBLY POSITIONED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED IN A LOAD.